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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/381,528	01/04/2000	YOSHINAO TAKETOMI	YAO-V04302	4078

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 11/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/381,528

Applicant(s)

TAKETOMI ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7, 13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) 2, 3, 8-12, 14 and 19-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-7, 13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on September 18, 2002, which has been entered as paper number 28.
- By this amendment, the applicant has amended claims 4, 6, 7, 13 and 17.
- Claims 4-7, 13 and 15-18 remain pending in this application.
- Claims 2-3, 8-12, 14 and 19-66 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.
- The rejections to claims under 35 USC 112, second paragraph, set forth in the previous Office Action dated May 16, 2002, are withdrawn in response to applicant's amendment.
- The rejections to claims under 35 USC 112, first paragraph, set forth in the previous Office Action, (*except* for the part concerning the making of hologram), and are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 4, 6, 7, 13 and 5, 15-18 are rejected under 35 U.S.C. 112, first paragraph**, because the specification, while being enabling for using opening extended in the vertical direction to avoid image blur, does not reasonably provide enablement for using opening extended in the horizontal direction to obtain best mode of operation. The specification does not enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification discloses that the opening (22, Figure 16A) having *horizontal* extension will *cause image blur* when the opening is used to regulate the reconstruction light for the hologram.

Claims 4, 6, 7 and 13 however have been amended to have the reconstruct light incident on the reflection hologram through an elongated openings arranged such that the light diffuses only in the *width* direction of the reflection type hologram which is understood to be *horizontal direction*.

3. Claims 4-7, 13 and 15-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification and the claims fail to teach how could the reflection type hologram be formed by simply having a light having information of an object, a reference light and a reconstructed image, and having the object light and reference light incident on a hologram dry plate as recited in *amended* claims 4, 6-7 and 13. In general, a hologram can only be recorded by having an object light and a reference light, *coherent* to each other, and being arranged to *intercept* and *interfere* with each other on a *hologram-recording medium*. Furthermore, in order to create a *reflection* type of hologram the reference light and object light should be incident on the holographic dry plate in an *opposite* direction. The *interference* effect and the *direction* of the light on the medium are *essential* elements that are required in order to form a reflection type of hologram. The accuracy of the claims is required.

The last paragraph with the amendment of claim 4 fails to adequately describe the formation of a transmission hologram for the reasons stated above. Namely the interference effect, which is essential for making a hologram but is lacking in the claim.

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4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 4-7, 13 and 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The phrase "the width direction of the reflection-type hologram", recited in claims 4, 6-7 and 13, is not clear and indefinite. The examiner can only interpret it as the horizontal direction of the dry plate. Clarifications are required.

The phrase "the diffused light" recited in claim 15 is indefinite since it does not have a clear antecedent basis from its based claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 4-7, 13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Kulick in view of the patent issued to Honigs (PN. 5,055,684).**

Claims 4, 6-7 and 13 have been significantly amended, new grounds of rejection are therefore set forth in the paragraph below.

Kulick et al teaches a *holographic display* that is comprised of a *holographic plate* (33 of Figure 7 or 77 of Figure 9) and a *light source* (56). Kulick et al teaches that the hologram recorded on the

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holographic plate (33 or 77) is produced by interfering a *reference light beam* with a light beam having an *object information* generated from a *transmission master hologram* (32 or 75), (please see Figures 7 or 9). Kulick et al further teaches that the transmission master hologram (32 or 75) is produced by splitting a light beam generated by a *laser light source* (20) into a reference light beam (26) and an object light beam (28) wherein the object light beam (28) is *diffusedly* reflected by a mirror (34) to the object (36). The diffusedly reflected object light beam passes through a *spatial filter* (F), which serves as the *slit*, to control the size of the light beam before it irradiates the object (36). The object light beam then *interferes* with the reference light beam (26) at the *holographic plate* (32) to create the *transmission* master hologram (32), (please see Figure 4 and columns 3-5). Kulick et al teaches that the holographic display may be either of *transmission mode* (33 Figure 7) or of *reflection mode* (77, Figure 9) wherein the object information is displayed by irradiate the holographic plate (33 or 77) with a reconstruction light beam that is the same as the reference beam used to create the holographic display (33 or 77).

Kulick et al teaches that the holographic display plate (33 or 77) may be created as a rainbow hologram wherein the holographic image of the object may be viewable by using a white light. The rainbow hologram is created by allowing only a *slit* of light from the master hologram (32) to illuminate the holographic plate (33 or 77). Kulick et al teaches that the confinement of the illumination may be achieved by **masking** the mater hologram using a masking plate **having apertures or slits** to create the slit beam, (please see column 4, lines 19-23). It is implicitly true that the mask having the slits or apertures must be placed adjacent to the transmission master hologram in order to confine object light beam from the master hologram to form a slit illumination.

Claims 4, 6, 7 and 13 have been amended to include the feature having the reconstructing light for the reflection type hologram being generated by the light source through an elongated opening arranged such that the light diffuses only in the width direction of the reflection type of the hologram. The Kulick et al reference does not teach such explicitly. Honigs in the same field of endeavor teaches a

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reflection type holographic grating (20, Figure 1) wherein the holographic grating is *reconstructed* by the light generated by a light source (12) that incidents on the holographic grating through an *entrance slit* (18) having elongated opening (Figure 2) such that the reconstructing light is diffused across the width direction of the holographic diffraction for the benefit of generating the reconstructing light with uniform illumination. It would then have been obvious to one skilled in the art to apply the teachings of Honigs to modify the holographic display of Kulick et al for the benefit of providing more uniformly illuminated reconstructing light of the display.

With regard to claims 7 and 17, Kulick et al further teaches that the holographic display plate (33 or 77) may be created as a rainbow hologram wherein the holographic image of the object may be viewable by using a white light. The rainbow hologram is created by allowing only a slit of light from the master hologram (32) to illuminate the holographic plate (33 or 77). Kulick et al teaches that the confinement of the illumination may be achieved by either using a *cylindrical lens* to create a slit beam or *masking* the mater hologram using a *masking plate having apertures or slits to create the slit beam*, (please see column 4, lines 19-23). It is implicitly true that the cylindrical lens and the mask having the slits or apertures must be placed adjacent to the transmission master hologram in order to confine object light beam from the master hologram to form a slit illumination. But it does not teach that both the mask and the cylindrical lens are used to create the slit beam. However such modification would have been obvious to one skilled in the art since both of the elements create confined slit beam to use both of them would require only routine skilled in the art and rearranging the elements in the display.

With regard to claims 16 and 18, Kulick et al teaches that the reference light beam is in a direction orthogonal to the diffused light beam, (please see Figure 7 and 9) however it does not teach explicitly that the reference light for creating the holographic plate is provided by having a plurality of light superposing on one another. However as long as the reference light is kept in coherence with the object light beam or the diffused light beam the reference may easily be modified to have a superposition

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of a plurality of light beams for the benefit of providing an alternative way of creating a reference light beam.

Response to Arguments

8. Applicant's arguments with respect to claims 4-7, 13 and 15-18 have been considered but are moot in view of the new ground(s) of rejection. The newly amended features have been fully considered and they are rejected for the reasons stated above.

9. Applicant's arguments are drawn to the amended features and they have been fully addressed in the paragraphs above.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

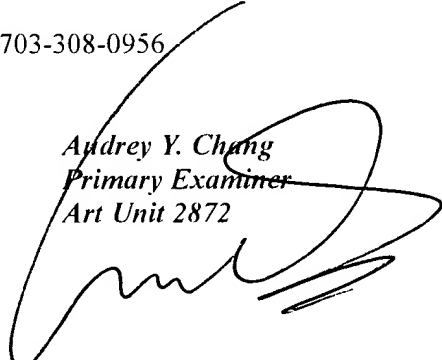
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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
November 26, 2002